

**CONTAINER LID WITH SELECTABLE OPENING  
AND VALVE ASSEMBLY FOR RETAINING A VALVE**

**BACKGROUND OF THE INVENTION**

**1. Field of the Invention**

**[0001]** This invention relates generally to a lid for a container, and more particularly, to a removable lid having two apertures therein, a cover adapted to contact either of the two apertures by pivoting on the lid, and a valve assembly for retaining a valve.

**2. Description of the Related Art**

**[0002]** During outdoor activities, objects in the environment such as flies, mosquitoes, hornets, dust, rain, and the like seem to find their way into open beverage containers. People prefer to avoid contact with such extraneous matter, and especially do not desire to have it in and about the containers from which they drink. Children, and even many adults, sometimes refuse to consume the contents of a container after witnessing various insects moving thereabout. More importantly, consuming a beverage into which minute particles from the air have fallen may prove unhealthy. In addition, whether indoors or outdoors, many people desire a drinking container that does not readily spill its contents when accidentally tipped or dropped.

**[0003]** Similarly, beverages are often consumed while in a vehicle in motion. Drivers and passengers alike generally desire beverage containers that, when tipped, shaken, or dropped, do not simply spill their contents about the vehicle cabin and its occupants. Further, whether indoors, outdoors, or in a vehicle, not everyone prefers to drink from a container in the same manner. That is, some people prefer to use a straw, while others prefer to simply drink directly from a spout. Moreover, most consumers consider beverage containers to be

fungible commodities. As such, a market exists for a simple, low cost, easily manufacturable product that renders a beverage container spill proof, prevents objects from the environment from contacting its contents, and at the same time provides a consumer with the option of consuming its contents either through a straw or directly from a spout.

**[0004]** Conventional container lids directed towards that market generally include an opening for a straw and an opening for pouring or sipping the contents of a container. Such lids may have pairs of covers to close off the openings, as disclosed by U.S. Patent No. 5,244,113 to Stymiest, or single removable covers to close off both openings, as disclosed by U.S. Patent No. 5,415,312 to Mueller. However, the container lid disclosed by Stymiest requires separate first and second closures for closing off the two openings, and both the first and second closures are separately connected to the lid. This increases manufacturing complexity and requires additional assembly steps and material, which raises the cost per lid. The container lid disclosed by Mueller includes a cover that does not attach to the lid. As such, that cover is easily separated and lost.

**[0005]** Therefore, there is a continuing need in the art for a simple, safe, low-cost, easily-manufacturable container lid having a plurality of apertures therein that can be alternately covered by a single cover, which is hingedly attached to the lid even when none of the plurality of apertures is covered.

#### SUMMARY OF THE INVENTION

**[0006]** This invention addresses the foregoing needs in the art by providing a container lid having two apertures therein, and comprising a cover hingedly attached to the lid and adapted to cover one of the two apertures at a time by pivoting on the lid, and a valve assembly for retaining a valve.

**[0007]** In a first embodiment of the invention, a container lid comprises a cover receiving portion having a first aperture and a second aperture formed therein and having a top side and

a bottom side, a valve housing, a valve, a valve retainer, a hinge, and a cover. The valve housing comprises a tubular retaining wall and a valve seat, the tubular retaining wall depending from and being integrally formed with the bottom side of the cover receiving portion and having an inner surface with a shoulder integrally formed therein, the valve seat depending from and being integrally formed with the bottom side of the cover receiving portion. The valve is receivable within the valve housing. The valve retainer has a retainer retention portion, the valve retainer being shaped so as to retain the valve within the tubular retaining wall and against the valve seat via engagement of the retainer retention portion with the shoulder of the tubular retaining wall. The hinge is integrally formed with the cover receiving portion and is positioned so that the first aperture is on one side of the hinge and the second aperture is on an opposite side of the hinge. The cover is attached to the cover receiving portion via the hinge, the cover comprising a first sidewall and a second sidewall opposite the first sidewall, each of the first sidewall and the second sidewall having a protrusion extending therefrom and shaped so as to engage one of the first aperture and the second aperture. The cover is pivotally attached to the lid via the hinge, and the cover pivots relative to the cover receiving portion so that when the protrusion on the first sidewall of the cover is pivoted toward the first aperture, the protrusion on the second sidewall of the cover simultaneously pivots away from the second aperture.

**[0008]** In another aspect of the first embodiment, the valve seat comprises a first seating surface. The first seating surface is inclined at a first angle relative to a plane orthogonal to a central longitudinal axis of the tubular retaining wall.

**[0009]** In yet another aspect of the first embodiment, the valve seat further comprises a projection. The projection comprises a second seating surface. The second seating surface is at a second angle relative to a plane orthogonal to the central longitudinal axis of the tubular retaining wall.

**[0010]** In yet another aspect of the first embodiment, the first angle and the second angle are different; for example, the second angle may be smaller than the first angle, the first angle

may be in a range of 22 degrees to 45 degrees, or the first angle may be in a range of 22 degrees to 45 degrees with the second angle being in a range of 5 degrees to 10 degrees.

**[0011]** In a second embodiment of the invention, a container assembly comprises a container having an upper lip and a lid. The lid is removably attachable to the upper lip of the container. The lid comprises (i) a substantially flat portion, the substantially flat portion having a first aperture and a second aperture formed therein, and having a top side and a bottom side; (ii) a hinge, the hinge being integrally formed with the substantially flat portion and being positioned so that the first aperture is on one side of the hinge and the second aperture is on an opposite side of the hinge; (iii) a valve housing, the valve housing comprising a tubular retaining wall and a valve seat, the tubular retaining wall depending from and being integrally formed with the bottom side of the substantially flat portion and having an inner surface with a shoulder integrally formed therein, the valve seat depending from and being integrally formed with the bottom side of the substantially flat portion; (iv) a valve, the valve being receivable within the valve housing; (v) a valve retainer, the valve retainer having a retainer retention portion, the valve retainer shaped so as to retain the valve within the tubular retaining wall and against the valve seat via engagement of the retainer retention portion with the shoulder of the tubular retaining wall; (vi) a cover, the cover being attached to the substantially flat portion via the hinge, the cover comprising a first sidewall and a second sidewall opposite the first sidewall, each of the first sidewall and the second sidewall having a protrusion extending therefrom and shaped so as to engage one of the first aperture and the second aperture; and (vii) a peripheral wall, the peripheral wall shaped so as to receive the upper lip therewithin.

**[0012]** In a third embodiment of the invention, an improved drinking assembly includes a container and a lid, the container having an upper lip, the lid being removably attachable to the upper lip of the container. The lid has (i) a first aperture and a second aperture formed therein and a top side and a bottom side, (ii) a hinge, the hinge being integrally formed with the lid and being positioned so that the first aperture is on one side of the hinge and the second aperture is on an opposite side of the hinge, and (iii) an aperture cover, the aperture

cover being attached to the lid via the hinge. The improvement comprises a valve housing, a valve, and a valve retainer. The valve housing comprises a tubular retaining wall and a valve seat. The tubular retaining wall depends from and is integrally formed with the bottom side of the lid and has an inner surface with a shoulder integrally formed therein. The valve seat depends from and is integrally formed with the bottom side of the lid. The valve is receivable within the valve housing. The valve retainer has a retainer retention portion and is shaped so as to retain the valve within the tubular retaining wall and against the valve seat via engagement of the retainer retention portion with the shoulder of the tubular retaining wall.

**[0013]** In a fourth embodiment of the invention, a valve assembly comprises a valve housing comprising a housing top portion, a tubular retaining wall, and a valve seat. The tubular retaining wall depends from and is integrally formed with the housing top portion and has an inner surface with a shoulder integrally formed therein. The valve seat depends from and is integrally formed with the housing top portion and has a first seating surface. The valve assembly further comprises a valve receivable within the valve housing, the valve comprising a flange having a top flange surface and a bottom flange surface; and a valve retainer having a retainer retention portion and a valve engaging surface, the valve retainer shaped so as to retain the valve within the tubular retaining wall and against the valve seat via engagement of the retainer retention portion with the shoulder of the tubular retaining wall. Furthermore, at least one of (i) the first seating surface is non-complementary to the top flange surface and (ii) the bottom flange surface is non-complementary to the valve engaging surface.

**[0014]** In a fifth embodiment of the invention, a valve assembly comprises a valve housing comprising a housing top portion, a tubular retaining wall, and a valve seat. The tubular retaining wall depends from and is integrally formed with the housing top portion and has an inner surface with a shoulder integrally formed therein. The valve seat depends from and is integrally formed with the housing top portion and has a first seating surface. The valve seat comprises a projection having a second seating surface. The valve assembly further comprises a valve receivable within the valve housing. The valve comprises a flange having

a top flange surface and a bottom flange surface. The valve assembly also comprises a valve retainer having a retainer retention portion and a valve engaging surface, the valve retainer shaped so as to retain said valve within the tubular retaining wall and against the valve seat via engagement of the retainer retention portion with the shoulder of the tubular retaining wall. Furthermore, at least one of (i) the first seating surface is non-complementary to the top flange surface, (ii) the second seating surface is non-complementary to the top flange surface, and (iii) the bottom flange surface is non-complementary to the valve engaging surface.

[0015] In another aspect of the fifth embodiment of the invention, (i) the first seating surface is at a first angle relative to a plane orthogonal to a central longitudinal axis of the tubular retaining wall, (ii) the second seating surface is at a second angle relative to a plane orthogonal to the central longitudinal axis of the tubular retaining wall, (iii) the top flange surface is at a top flange angle relative to a plane orthogonal to a central longitudinal axis of said valve, and (iv) the first angle is greater than the top flange angle. In yet another aspect of the fifth embodiment, at least one of (i) the first angle is about 1 degree to about 25 degrees greater than the top flange angle; (ii) the first angle is about 14 degrees greater than the top flange angle; (iii) the second angle is about 5 degrees to about 10 degrees; and (iv) the second angle is about 6 degrees.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0016] Figure 1 is a perspective view of a top of a lid in accordance with this invention;

[0017] Figures 2A and 2B are perspective views of a cover for use in this invention;

[0018] Figure 3 is a perspective view of an underside of the lid shown in Figure 1;

[0019] Figure 4 is a perspective view of the lid in accordance with this invention attached to a container;

[0020] Figure 5 is a sectional view along the line I-I in Figure 4 while Figure 5A is a partial cut-out sectional view of the portion 5A shown in Figure 5;

[0021] Figures 6 and 7 are partial cross-sectional views of a valve housing shown in Figure 5;

[0022] Figure 8 is a perspective view of a valve for use in this invention;

[0023] Figure 9 is a sectional view of the valve taken along the line J-J in Figure 8;

[0024] Figure 10 is a perspective view of a valve retainer for use in this invention, which is used to retain a valve in the valve housing;

[0025] Figure 11 is a sectional view of the valve retainer taken along the line K-K in Figure 10; and

[0026] Figure 12 is a partial cross-sectional view of an assembled valve housing, valve, and valve retainer.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] This invention relates generally to a container lid comprising a hinge, a plurality of apertures disposed in the lid and positioned on opposite sides of the hinge, a cover pivotally connected to the lid via the hinge, and a valve assembly for retaining a valve. The cover comprises two sides and a protrusion on each side, each protrusion being adapted to sealingly engage (or alternatively to fit within) one of the plurality of apertures in the lid.

[0028] Figure 1 shows a perspective view of a lid 100 according to the preferred embodiment. The lid 100 comprises a top 124 and a peripheral wall 102 depending therefrom. A circumference of the top 124 is generally circular, and a cross section of the top

124 is generally arcuate, rising from a low point at a periphery of the top 124 to a high point near a center of the top 124. A cover receiving portion, preferably a flat portion 104, extends across the top 124 and through the center of the top 124. The flat portion 104 comprises at least two apertures formed therein. These apertures in the cover receiving portion can be of the same or different shape and size. Preferably, however, one aperture is, for example, a straw hole 106 suitable for receiving a conventional straw, and another aperture is, for example, a spout 108 suitable for pouring or sipping contents of a container 400 (see Figure 4). Various shapes for the apertures, such as circular, elliptical, polygonal, rectangular, and the like, can be formed in the flat portion 104 without departing from the scope of the invention. Near the spout 108, the lid 100 further comprises an extending lip 110 to aid in sipping.

[0029] A tongue 112 is provided on one side of the lid 100 and is integrally formed with the peripheral wall 102 to facilitate removal and handling of the lid 100. Of course, the tongue 112 may be a separate piece, or may be disposed of altogether without departing from the scope of the invention. Moreover, the tongue 112 can be a variety of shapes and sizes, such as an arcuate, rectangular, or triangular extension from the lid.

[0030] Figures 2A and 2B show a cover 300 for use in this invention. The cover 300 comprises two sides 302, 302' each with a protrusion 304, 306, respectively disposed thereon and shaped to sealingly engage, fit within, or mate with one of the apertures in the flat portion 104. As shown in Figures 1, 2A, and 2B, the side 302 of the cover 300 nearest the straw hole 106 includes the protrusion 304, which is shaped similarly to the straw hole 106, and the side 302' of the cover 300 nearest the spout 108 includes the protrusion 306, which is shaped similarly to the spout 108. Of course, the protrusions 304, 306 and the apertures 106, 108 may take on a variety of shapes, such as contoured, elliptical, polygonal, and the like, other than the straw holes and spouts shown.

[0031] As illustrated in Figures 2A and 2B, the cover 300 comprises an L-shaped handle 308 extending orthogonally from the side 302. The handle 308 has an orthogonal panel 310

perpendicular to the side 302 and a parallel panel 312 parallel to the side 302, thus forming the L-shaped handle 308. Near a corner formed by an intersection of the panels 310, 312 of the handle 308, a first rib 314 is formed. When the cover 300 is closed over the straw hole 106, the first rib 314 grips a bottom edge of the wall 102, holding the cover 300 closed against the flat portion 104, as illustrated in Figure 3. The orthogonal panel 310 also includes a second rib 316 that engages with a notch 114, shown in Figure 5, formed in the lid 100, thus keeping the cover 300 in place over the spout 108. Although the first and second ribs 314, 316 and the notch 114 are preferably provided, they may be omitted without departing from the scope of the invention.

[0032] The cover 300 is pivotally attached to the lid 100 near the middle of the flat portion 104, as shown in Figure 1. The flat portion 104 comprises at least one pair of protruding forks 116, preferably two pairs of protruding forks 116, and the cover 300 comprises a rod-shaped end 318 and at least one window 320, preferably a pair of windows 320. The rod-shaped end 318 is received by the forks 116 (e.g., the rod-shaped end 318 snaps into the forks 116) at the location of the windows 320, thereby allowing for hinged movement of the cover 300. Of course, other hinge-like structures may be used without departing from the scope of the invention, such as extending the rod-shaped end 318 beyond an endwall of the cover 300 to form extended pins and using forks or pin receiving means to restrain the cover 300 on the lid 100 via the extended pins.

[0033] An underside of the lid 100 according to the preferred embodiment is shown in Figure 3. A valve housing 500 depends from and is integrally formed with an underside (i.e., bottom side) of the flat portion 104 and generally surrounds the straw hole 106. A ridge 130 extends around the wall 102, and a plurality of stops 118 protrude from the underside of the lid 100. Three stops 118 are shown; however, there are three additional stops on the opposite side of the flat portion 104 that are obscured by the wall 102 (in Figure 3). Nevertheless, any number of stops may be provided, from none to a continuous ridge, without departing from the scope of the invention, to provide a mating surface between the lid 100 and the container 400.

[0034] The valve housing 500, shown in Figures 3 and 5 and in greater detail in Figures 6, 7, and 10, comprises a housing top portion, a tubular retaining wall 502, and a valve seat 503. The tubular retaining wall 502 depends from and is integrally formed with the housing top portion, the housing top portion being integrally formed with the bottom side of the flat portion 104. The tubular retaining wall 502, which is preferably cylindrical in shape, includes an inner surface 504 with a shoulder 505 integrally formed therein. The shoulder 505 is preferably continuous about the circumferential inner surface 504 of the tubular retaining wall 502, but may also be intermittent (i.e., discontinuous), in the form of spaced-apart shoulders. The valve seat 503 also depends from and is integrally formed with the housing top portion, which is integrally formed with the bottom side of the flat portion 104. The valve seat 503 is positioned inside of, or within a perimeter of, the tubular retaining wall 502. In addition, the valve seat 503 is preferably continuous in form; that is, the valve seat 503 is preferably a depending ring-like structure, which may be, for example, cylindrical in shape. However, the valve seat 503 may also be intermittent (i.e., discontinuous), in the form of a plurality of spaced-apart valve seats.

[0035] The valve seat 503 comprises a first seating surface 508. The first seating surface 508 is inclined at a first angle  $\alpha$  relative to a plane orthogonal to a central longitudinal axis 501 of the tubular retaining wall 502. Alternatively, the valve seat 503 comprises a projection 510 (see Figure 7), which further depends downwardly from the bottom side of the flat portion 104. The projection 510 comprises a second seating surface 518. The second seating surface 518 is inclined at a second angle  $\beta$  relative to a plane orthogonal to the central longitudinal axis 501 of the tubular retaining wall 502. The valve housing 500, including the tubular retaining wall 502 and the valve seat 503, is shaped so as to allow receipt of a valve 200 therewithin.

[0036] Figure 8 generally shows a perspective view of the valve 200, which is one example of a valve for use in this invention, and Figure 9 generally shows a sectional view of the valve 200 taken along the line J-J in Figure 8. Such valves 200 are produced by Liquid Molding

Systems, Inc., Midland, Michigan, marketed through Sequist Closures of Mukwanago, Wisconsin, under the SIMPLISQUEEZE line, and typically made of silicone. As shown in Figure 9, the valve **200** preferably comprises a flange **202** and a plurality of slits **204**. The flange **202** has an upper surface **203** and a lower surface **205**. The upper surface **203** is formed at an angle  $\omega$  relative to a plane orthogonal to a central longitudinal axis **201** of the valve **200**, and the lower surface **205** is formed at an angle  $\eta$  relative to a plane orthogonal to the central longitudinal axis **201** of the valve **200**. The plurality of slits **204** allows for insertion of an object therethrough, such as a conventional straw. When a straw or similar tube is not inserted through the valve **200**, then the valve **200** provides a spill-proof seal, meaning that fluid contents of the container **400** coming in ephemeral contact with the valve **200** will not pass through the valve **200**.

[0037] The valve **200** is preferably secured within the valve housing **500** via a valve retainer **600**, which is generally shown in Figures 10 and 11. The valve retainer **600** preferably comprises a retainer retention portion **602** and a valve engaging surface **603**. The valve engaging surface **603** is formed at an angle  $\Phi$  relative to a plane orthogonal to a central longitudinal axis **601** of the valve retainer **600**. The valve retainer **600** is shaped so as to retain the valve **200** within the tubular retaining wall **502** and against the valve seat **503** via engagement of the retainer retention portion **602** with the shoulder **505** of the tubular retaining wall **502**, as shown, for example, in Figure 12. Figure 12 shows the valve **200** secured within the valve housing **500** using the valve retainer **600**. In order to secure (i.e., retain) the valve **200**, the valve **200** is first placed within the valve housing **500** so that the flange **202** of the valve **200** abuts the valve seat **503**. Then, the valve retainer **600** is pressed within the tubular retaining wall **502**, towards the bottom side of the flat portion **104**, until the retainer retention portion **602** snap-fittingly engages the shoulder **505** of the tubular retaining wall **502**. In this position, the valve retainer **600** exerts a force upon the valve **200**, effectively squeezing the flange **202** between the valve seat **503** and the valve retainer **600**. The valve retainer **600** is preferably snap-fitted within the tubular retaining wall **502**; however, the valve retainer **600** may also be effectively retained in place by alternative

means, such as by ultrasonic welding or with adhesives, which may render the shoulder 505 optional.

[0038] The configuration of the valve seat 503 substantially determines the magnitude of the force (e.g., squeezing force) exerted upon the flange 202, when assembled as shown, for example, in Figure 12. Consequently, the configuration of the valve seat 503 determines, in significant part, the amount of withdrawal force necessary to forcibly remove the valve 200 from its mounted position in the valve housing 500 through the straw hole 106 (i.e., from the top side of the lid). To this end, various configurations of the valve seat 503 are discussed below with reference to Figures 6 and 7.

[0039] A basic configuration of the valve seat 503 has the first angle  $\alpha$  of the first seating surface 508 of the valve seat 503 being complementary to the angle  $\omega$  of the upper surface 203 of the valve 200, with the angle  $\eta$  of the lower surface 205 of the valve 200 being complementary to the angle  $\Phi$  of the valve engaging surface 603 of the valve retainer 600. In this configuration, the first seating surface 508 meets the upper surface 203 and the lower surface 205 meets the valve engaging surface 603, surface-to-surface, in a complementary fashion (i.e., like pieces of a puzzle). However, in this configuration, the amount of withdrawal force necessary to forcibly remove the valve 200 from its mounted position in the valve housing 500 through the straw hole 106 is less than can be obtained from the following configurations of the valve seat 503.

[0040] An improved configuration of the valve seat 503, as shown in Figure 6, has the first angle  $\alpha$  of the first seating surface 508 of the valve seat 503 being different than, and preferably greater than, the angle  $\omega$  of the upper surface 203 of the valve 200, with the angle  $\eta$  of the lower surface 205 of the valve 200 being complementary to the angle  $\Phi$  of the valve engaging surface 603 of the valve retainer 600. In this configuration, the first seating surface 508 is not complementary with the upper surface 203, while the lower surface 205 and the valve engaging surface 603 meet each other, surface-to-surface, in a complementary fashion. For example, where the angle  $\omega$  is 22 degrees, the angle  $\alpha$  is selected to be greater than 22

degrees, such as from greater than 22 degrees to 45 degrees, and is preferably selected to be about 36 degrees. In this configuration, the amount of withdrawal force necessary to forcibly remove the valve **200** from its mounted position in the valve housing **500** through the straw hole **106** is greater than the required withdrawal force in the basic configuration of the valve seat **503** discussed above.

[0041] Another improved configuration of the valve seat **503**, as shown in Figure 7, includes the projection **510** with at least one seating surface, such as the second seating surface **518**. In this configuration, the first angle  $\alpha$  of the first seating surface **508** of the valve seat **503** is the same as or different than, and preferably greater than, the angle  $\omega$  of the upper surface **203** of the valve **200**, and the second angle  $\beta$  of the second seating surface **518** of the valve seat **503** relative to the plane orthogonal to the central longitudinal axis **501** of the tubular retaining wall **502** is zero or greater, with the angle  $\eta$  of the lower surface **205** of the valve **200** remaining complementary to the angle  $\Phi$  of the valve engaging surface **603** of the valve retainer **600**. Preferably, the second angle  $\beta$  is smaller than the first angle  $\alpha$ , so that the first seating surface **508** is not parallel with the second seating surface **518**. In addition, the first seating surface **508** is preferably angled in a direction generally opposite that of the second seating surface **518**, as shown, by way of example, in Figure 7. For example, where the angle  $\omega$  is 22 degrees, the angle  $\alpha$  is preferably selected to be from 22 degrees to 45 degrees, and the second angle  $\beta$  is preferably selected to be in the range of 5 degrees to 10 degrees, more preferably between 5 degrees and 6 degrees. In this configuration, the second seating surface **518** is not complementary with the upper surface **203**, while the lower surface **205** and the valve engaging surface **603** meet each other, surface-to-surface, in a complementary fashion. Also, in this configuration, the amount of withdrawal force necessary to forcibly remove the valve **200** from its mounted position in the valve housing **500** through the straw hole **106** is again greater than the required withdrawal force in the basic configuration of the valve seat **503** discussed above. Of course, the projection **510** may comprise a plurality of seating surfaces, such as, for example, two second seating surfaces **510** configured to form a point (e.g., a wedge-like projection).

[0042] One resulting feature of each example of the improved configurations of the valve seat 503, as shown in Figures 6 and 7, is that the force (e.g., squeezing force) exerted upon the flange 202, when assembled as shown, for example, in Figure 12, is neither too small nor too great. That is, if the squeezing force were too small, the amount of withdrawal force necessary to forcibly remove the valve 200 from its mounted position in the valve housing 500 through the straw hole 106 would likewise be small. Similarly, if the squeezing force were too great, the flange 202 of the valve 200 would act like a compressed spring and cause the valve retainer 600 to dislodge from its snap-fitted position within the tubular retaining wall 502. As such, a person of ordinary skill in this art would appreciate that the particular configuration of the valve seat 503, including its optional projection 510, is dependent, at least in part, on (1) the particular material(s) comprising the valve 200, the valve retainer 600, and the valve housing 500, (2) the particular shape of the flange 202 of the valve 200, including the angle  $\eta$  of the lower surface 205 of the valve 200 and the angle  $\omega$  of the upper surface 203 of the valve 200, and (3) the selected means for securing the valve retainer 600 within the tubular retaining wall 502.

[0043] In addition, although the above discussion was directed to manipulating the valve seat 503 with respect to the upper surface 203 of the valve 200, a person of ordinary skill in this art would recognize that the same or equivalent features may be provided on the valve engaging surface 603 of the valve retainer 600 with respect to the lower surface 205 of the valve 200, as additional features or with the upper surface 203 and the valve seat 503 configured to meet each other, surface-to-surface, in a complementary fashion.

[0044] The lid 100 is removably attachable to a container 400 having a flared top 402, as shown in Figure 4. As illustrated in Figures 5 and 5A, the ridge 130 of the lid 100 contacts the flared top 402 to removably secure the lid 100 to the container 400. When the lid 100 is secured to the container 400, a seal is formed as the ridge 130 contacts the flared top 402. This seal may be a leak-resistant, a leak-proof, or a spill-proof seal. Preferably, the seal formed is a leak-proof seal. Also, when the lid 100 is secured to the container 400, the stops 118 abut the flared top 402 of the container 400. Moreover, in another aspect of the

invention, the lid 100 preferably snaps onto or snap-fittingly engages with the container 400, thus producing a snapping sound upon properly attaching the lid 100 to the container 400.

[0045] The lid 100, cover 300, and container 400 can be manufactured from a variety of materials, but are preferably plastic. Such plastics include high density polyethylene (HDPE), any polyolefin, including but not limited to linear low density polyethylene (LLDPE), polypropylene (PP), and low density polyethylene (LDPE). The plastics used should preferably provide a rigidity between that of LDPE and polypropylene. That is, the plastics used should preferably be rigid enough to provide a solid snapping sound when the lid 100 and the container 400 are attached together, but pliable enough to provide a leak-proof seal therebetween.

[0046] In operation, the lid 100 is attached to the container 400 containing a fluid, such as a beverage, and the cover 300 is selectively snapped down over one of the apertures, such as the spout 108, as shown in Figure 4. A conventional straw can then be placed into the straw hole 106. Alternatively, if a user chooses to drink out of the spout 108, the user can remove the straw and pivot the cover 300 so as to cover the straw hole 106 and expose the spout 108. When done drinking, the user may pivot the cover 300 back over the spout 108. In this position, the cover 300 seals the spout 108 to prevent fluid leakage, and the valve 200 prevents fluid leakage through the straw hole 106 in the event the container 400 is tipped over.

#### INDUSTRIAL APPLICABILITY

[0047] This invention provides a container lid for removable attachment to a container. This lid includes apertures, such as a straw aperture and a spout aperture, through which a user may withdraw contents of the container, and a pivotally attached cover for selectively sealing the apertures. This lid allows a user to consume the contents of the container through a straw or from a spout, while preventing external environmental objects from contacting the contents and preventing accidental spilling of the contents. When not consuming the

container contents, a user may seal the spout aperture with the cover and allow a gasket within the straw aperture to seal that aperture. In this state, the lid substantially prevents the container contents from contacting the environment external thereto, thus making this invention highly suitable for use outdoors or in vehicles.

**[0048]** While this invention has been described with reference to what are currently considered to be the preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments. On the contrary, the invention is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.